

## **REMARKS**

In an Office Action dated October 1, 2010, claims 29-32 and 38-56 were rejected. Herein, claims 29, 52, and 54 have been amended. No new matter has been added. Applicants respectfully request further examination and reconsideration in view of the following remarks.

### **I. Claim Rejections under 35 U.S.C. 112**

Claims 29-32 and 38-56 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner has taken the position that the limitation of “wherein the hard magnetic applies a current through the magnetizing coil only when the reflection mirror is switched between the deformed state and the non-deformed state,” as recited in independent claims 29, 52, and 54, is not supported by the specification as filed.

Applicants note that above-noted limitation of independent claim 29 has been amended from “wherein the hard magnetic member applies a current through the magnetizing coil only when the reflection mirror is switched between the deformed state and the non-deformed state” to --wherein the current, applied by the driving circuit, is passed through the magnetizing coil of the switching device only when the reflection mirror is switched between the deformed state and the non-deformed state--. Independent claims 52 and 54 have been amended in a similar manner to address the Examiner’s concerns.

Applicants note that support for the above amendment is found at least at page 18, lines 17-22 of the specification as originally filed, which states that “[w]hen a current is passed through the switching device 10 by means of a driving circuit 101, a magnetic attraction force F is induced, and the reflection mirror 5 is deformed in such a manner that the reflection surface forms a concave surface,” and at page 25, lines 19-21 of the specification as originally filed, which states that “[w]hen a current is passed through the magnetizing coil 10c, a predetermined magnetomotive force is induced, so that the hard magnetic member 10a is magnetized or demagnetized.”

In view of the above, Applicants respectfully submit that the Examiner's concerns have been appropriately addressed by the amendments to independent claims 29, 52, and 54. Accordingly, it is respectfully requested that the rejection of claims 29-32 and 38-56 under 35 U.S.C. 112, first paragraph, be withdrawn.

## **II. Patentability of the Pending Claims**

On page 5 of the Office Action, the Examiner has indicated that no prior art rejection will be made until the rejection of the pending claims under 35 U.S.C. 112, first paragraph, is fully addressed. However, Applicants note that in the "Response to Arguments" section on pages 2 and 3 of the Office Action, the Examiner has responded to the arguments included in the Amendment filed on June 7, 2010. Accordingly, it appears that the Examiner is maintaining the prior art rejections of the pending claims under 35 U.S.C. 102/103 as indicated in the Office Action dated March 5, 2010.

In order to expedite prosecution of the present application, Applicants will respond to the prior art rejections in the Office Action dated March 5, 2010 in view of the pending claims as presently amended.

## **III. Claim Rejections under 35 U.S.C. 102**

Claims 29-32, 39, 40, 45, and 52-55 were previously rejected under 35 U.S.C. 102(b) as being anticipated by Maruyama (JP 2003-067969, machine translation). Applicants respectfully submit that claims 29-32, 39, 40, 45, and 52-55 are patentable over Maruyama based on the following.

Claim 29 recites a switching device that switches a reflection mirror between a deformed state and a non-deformed state using a magnetic force, the switching device having a hard magnetic member made of a hard magnetic material and a magnetizing unit including a magnetizing coil, that a current is passed through the switching device by a driving circuit, and that the current, applied by the driving circuit, is passed through the magnetizing coil of the switching device only when the reflection mirror is switched between the deformed state and the

non-deformed state. Applicants respectfully submit that the above-noted features of claim 29 are not disclosed, suggested, or otherwise rendered obvious by Maruyama.

Maruyama is directed to an optical pickup used for the optical recording playback in which a variable mirror 409 having a ferromagnetic substrate 409e is attached to a permanent magnet 426 via an arrangement of coils 427, and an electromagnetic force is generated by applying an electric current to the coils 427 in order to change the form of the variable mirror 409 (*See Drawing 18 and [0036]-[0038]*). In other words, Maruyama is merely directed to changing the shape of the variable mirror 409 by utilizing an electromagnetic force. However, Applicants respectfully submit that Maruyama contains no disclosure relating to the switching between magnetization and demagnetization of the permanent magnets 426 in order to change the shape of the variable mirror 40 by a magnetic force, as required by claim 29.

On page 3 of the Office Action, the Examiner states the following:

“By definition, a permanent magnet retains magnetism after being magnetized by electrical current. Maruyama discloses a deformable mirror able to change to flat, convex, and concave surfaces (see discussion in paragraph [0017]). In paragraphs [0036], [0037], and [0039], Maruyama further discloses applying “switchable current” and “current of different quantities” to the coils in order to deform the mirror to the desired shape. Maruyama also teaches that the direction of the current can be changed to achieve the desired surface. Since the permanent magnet retains magnetism after being magnetized by electrical current, in order for the mirror to change to either flat, convex, or concave after application of an electric current, the permanent magnet must be demagnetized.”

Applicants respectfully disagree that Maruyama teaches the above-noted features of claim 29 based on the reasoning that “[s]ince the permanent magnet retains magnetism after being magnetized by electrical current, in order for the mirror to change to either flat, convex, or concave after application of an electric current, the permanent magnet must be demagnetized.”

In this regard, paragraph [0036] of Maruyama discloses that “[i]f the respectively suitable current for each coil 427 is supplied from each drive circuit 428, each coil 427 will be opposed or absorbed by the electromagnetic force committed between the permanent magnets 426, and the substrate 409e and the thin film 409a will be changed” (emphasis added). Applicants note

that since a permanent magnet is generally not demagnetized, it is respectfully submitted that absent an explicit indication to the contrary, Maruyama merely teaches that the shape of the variable mirror 409 is changed by utilizing an electromagnetic force. In other words, absent explicit indication that the permanent magnets 426 of Maruyama are demagnetized, Murayama necessarily fails to teach that the shape of the variable mirror 409 is changed by a magnetic force, as required by claim 29.

Additionally, Applicants note that while paragraph [0039] discloses that “if the electric power switch 413 is replaced by the switch for change and power supply opening and closing, the direction which current flows into the coil 427 can be changed, and the shape of the substrate 409e and the thin film 409a can be changed freely,” it is respectfully submitted that paragraph [0039], as well as the Maruyama reference as a whole, fails to indicate that the permanent magnets 426 are magnetized by the application of the current to the coil 427. Accordingly, it is apparent that the permanent magnets 426 of Maruyama are magnetized before the application of the current to the coil 427, and as such, Applicants respectfully submit that there is no basis in the Maruyama reference for the Examiner’s contention that “the permanent magnet retains magnetism after being magnetized by electrical current” (emphasis added).

Further, while the Examiner states that “after being magnetized by electrical current, in order for the mirror to change to either flat, convex, or concave after application of an electric current, the permanent magnet must be demagnetized,” it is noted that the Maruyama reference does not indicate that the shape of variable mirror 409 is changed after the application of the electric current. On the contrary, Maruyama merely indicates that the shape of the variable mirror 409 is changed by the application of the electrical current.

Moreover, as noted above Maruyama discloses that “[i]f the respectively suitable current for each coil 427 is supplied from each drive circuit 428, each coil 427 will be opposed or absorbed by the electromagnetic force committed between the permanent magnets 426, and the substrate 409e and the thin film 409a will be changed.” Accordingly, because Maruyama teaches changing the variable mirror 409 by an electromagnetic force acting between the permanent magnets 426, it is not necessary that the permanent magnets 426 be demagnetized in order to

change the shape of the variable mirror 409, and as such, Applicants respectfully submit that it is not necessarily true that the permanent magnets 426 must be demagnetized in order to change the shape of the variable mirror 409, as contended by the Examiner.

In view of the above, Applicants respectfully submit that Maruyama is merely directed to changing the shape of the variable mirror 409 by utilizing an electromagnetic force. However, Maruyama contains no disclosure relating to the switching between magnetization and demagnetization of the permanent magnet 426 in order to change the shape of the variable mirror 40 by a magnetic force, as required by claim 29.

In particular, claim 29 recites a switching device that switches a reflection mirror between a deformed state and a non-deformed state using a magnetic force, the switching device having a hard magnetic member made of a hard magnetic material and a magnetizing unit including a magnetizing coil, that a current is passed through the switching device by a driving circuit, and that the current, applied by the driving circuit, is passed through the magnetizing coil of the switching device only when the reflection mirror is switched between the deformed state and the non-deformed state.

Accordingly, Applicants respectfully submit that Maruyama fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 29. Therefore, claim 29 is patentable over Maruyama.

Further, claims 30-32, 39, 40, and 45 are patentable over Maruyama based at least on their dependency from claim 29.

Claim 52 recites a switching device that switches a reflection mirror between a deformed state and a non-deformed state using a magnetic force, the switching device having a hard magnetic member made of a hard magnetic material and a magnetizing unit including a magnetizing coil, that a current is passed through the switching device by a driving circuit, and that the current, applied by the driving circuit, is passed through the magnetizing coil of the switching device only when the reflection mirror is switched between the deformed state and the

non-deformed state. Applicants respectfully submit that Maruyama fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 52 for reasons similar to those discussed above with respect to claim 29. Therefore, claim 52 is patentable over Maruyama.

Claim 53 is patentable over Maruyama based at least on its dependency from claim 52.

Claim 54 recites a feeding portion that supplies an optical head with power, a switching device that switches a reflection mirror between a deformed state and a non-deformed state using a magnetic force, the switching device having a hard magnetic member made of a hard magnetic material and a magnetizing unit including a magnetizing coil, and that the feeding portion supplies the optical head with the power needed to switch the states of the reflection mirror only when the reflection mirror is switched between the deformed state and the non-deformed state. Applicants respectfully submit that Maruyama fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 54 for reasons similar to those discussed above with respect to claim 29. Therefore, claim 54 is patentable over Maruyama.

Claims 55 and 56 are patentable over Maruyama based at least on their dependency from claim 54.

#### **IV. Claim Rejections under 35 U.S.C. 103**

Claims 38, 41, and 42 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Maruyama in view of Nishioka et al. (US 2006/0187563, hereafter “Nishioka”). Applicants respectfully submit that Nishioka fails to provide disclosure that would obviate the above-mentioned deficiencies of Maruyama. Therefore, claims 38, 41, and 42 are patentable over any combination of Maruyama and Nishioka based at least on their dependency from claim 29.

#### **VI. Previously Indicated Allowable Subject Matter**

Applicants note that in the Office Action dated March 5, 2010, claims 43, 44, 46-51, and 56 were indicated as containing allowable subject matter. While the Examiner has indicated that no statement on Allowability will be made until the rejection of the claims under 35 U.S.C. 112,

first paragraph, is fully addressed, it is believed that the subject matter of claims 43, 44, 46-51 and 56 is allowable over the prior art of record.

## **V. Conclusion**

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 29-32 and 38-56 are clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner believes that there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Akira KUROZUKA et al.

/Stephen W. Kopchik/

By 2011.01.03 14:15:16 -05'00'

Stephen W. Kopchik  
Registration No. 61,215  
Attorney for Applicants

SWK/ats  
Washington, D.C. 20005-1503  
Telephone (202) 721-8200  
Facsimile (202) 721-8250  
January 3, 2011